Southwest MN IPM STUFF
All the pestilence that’s fit to print

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If you would like to be added to this mailing list, send a request to Molly Werner at werner022@umn.edu. This newsletter and the advice herein are free. You usually get what you pay for.

Crop Weather
Rainfall, temperatures, degree-days and other current and historical weather data for a spot about two miles west of Lamberton, MN can be found at the University of Minnesota Southwest Research and Outreach Center (SWROC) website: http://swroc.cfans.umn.edu/WeatherInformation/index.htm.

As of June 22, we were at 1336 degree-days (Base 50/86 °F). We are close to the long-term average of 1369 DDs for this date. We picked up 179 degree-days and 0.01 inches of precipitation the week of July 16-22. Some areas of SW Minnesota, including the SWROC, could use rain - some desperately.

May 14th planted soybeans at the SWROC now stage as: 2.4 maturity - R3 (beginning seed), 2.0 Maturity and 1.4 Maturity - R 4.5 (full pod). These stages have implications for glyphosate applications. Read the pesticide label.

May 3rd and 14 planted corn is: 93 day RM - R1 (silk), 104 day RM - VT (tassel).

Old school weed management
Symptoms of growth regulator herbicide injury are unusually prevalent on soybeans this year. Drift of phenoxy herbicides (2, 4-D, dicamba, stinger, tordon etc.) to soybeans and other sensitive crops can be a problem. Spray tanks contaminated with phenoxy herbicides (and other chemistries) can also be a problem. Phenoxy herbicides produce soybean injury symptoms at very minute concentrations. Look at the potential for drift and sprayer contamination while you weigh herbicide carryover. Sometimes,
environmental factors and other chemistries can sometimes produce symptoms resembling growth regulator herbicides.

Manure can provide a direct application of chlorpyralid or picloram to your soybean crop. Liz Stahl had a recent MN Crop News article about ditch hay and herbicides being excreted in livestock urine. Summary: Only apply manure from animals fed ditch or CPR hay to fields that are going into corn or other grass crops (preferably two years or more). You do not often know what herbicides were applied to the hay!

**New school weed management**
For the remainder of the season, note where waterhemp and ragweed escapes occur. These corn and soybean fields may need special management in the future. The value of time saved by skipping a pre-emerge herbicide at planting is best pondered while pulling waterhemp in August.

**Armyworm**
I’ve heard of problems in Wabasha, Goodhue, Chisago, Benton, Wright, Stearns, Brown Crow Wing, Ottertail and Wilkin. There are probably others. In the case of row crops, these usually reflect grass weed control problems. Many are spots in fields or edges. Make sure the larvae are still active before you decide to spray. This does not affect a large percentage of row crop fields from what I can piece together. Unfortunately, there was spectacular damage in some infested fields.

Well... at least a few armyworms made a mistake. Dan Martens reported soybeans damaged by armyworm in Benton County. The field had a grass problem that was killed late. The starving armyworms resorted to soybean. I wonder if an armyworm can get a gut ache. If you have armyworm feeding in soybean this time of year and larvae are still actively feeding, include them with other defoliators and use the 20% whole plant defoliation economic (treatment) threshold.

This threshold can be used for many defoliating insects from flower through R5 (full seed) stage soybeans. Average leaflet damage from the top, middle and lower canopy. Scout the field interior not just the edge.

I pilfered this defoliation guide from the web. It has been around a long time but I do not recall who developed it originally. I regret being unable to provide the citation.
Iowa State University has a photo based version of soybean defoliation.

As you can see from this illustration, 20% defoliation is a little intense. Research suggests that the soybeans don’t seem to mind all that much though. Of course, feeding patterns vary by insect and may not always look like the illustration. I try to visualize the lost tissue moved to the base of the leaf and estimate the percentage that way. This method may or may not work well for an individual scout.

**Corn rootworms**

I am getting a few reports of damage in some of the fields with Bt performance problems in 2012. I checked a research site this week. Non Bt-RW and VT3 hybrids are heavily damaged. We are starting to see a few male western corn rootworm beetles and root feeding should be starting to slow as the remaining larvae continue to mature and pupate.

For those of you are trying to keep on top of things, corn rootworm beetle scouting beetle should start next week. Some of you may be interested in a rootworm survey project. Ken Ostlie has sticky traps available if you would like to volunteer. I will forward details as I receive them.

Depending on weather and beetles, we could be digging roots in a Brown county research site as early as next week. If you have some time available, I could use some help this year. This would be a good opportunity to see insecticide efficacy and trait performance in a field where Bt-RW hybrids have struggled - details to follow.

**Soybean diseases**

![Soybean disease images]

Scattered plants with chronic root rots continue succumb. Late emerging and injured plants will die as the soybean canopy closes. Bacterial blight (left) is the most common foliar disease in the fields I have been in. Some of the tattered leaves out there are a result of this disease rather than insect feeding.

**Corn diseases**

Foliar fungicide applications have a higher probability of economic return when fungal leaf diseases are present. It would be a good time to look for leaf disease if you are thinking about a fungicide in corn.

**Gray leaf spot** is most often associated with yield responses to fungicide. However, I am seeing very little disease in the current desert-like environment of Lamberton.

**Common corn rust** is the most common fungal leaf disease present here. Sweet corn can be susceptible.
Giant aphids on giant ragweed.
Tony Hansen was examining a patch of giant ragweed and sent a photo of very large reddish brown aphids. They could be brown ambrosia aphids which feed on giant ragweed and other large Asteraceae; they are likely a species of *Uroleucon* in any event. Unfortunately, they do not appear to be an effective biocontrol for giant ragweed. They are cool though.

Soybean aphids
I do not claim to have knowledge of the aphid populations in many fields across through the state of Minnesota. So base your aphid management decisions on your own fields.

Aphid populations have struggled to reach *economic threshold levels* (250 aphids/plant average) in a few more fields. Brad Muller found a couple Yellow Medicine County fields at threshold. He commented on the number of winged aphids. A few small Nicollet County fields that I have been tracking are close to threshold. There, extremely variable populations and fluctuating populations are making treatment decisions more difficult than usual.

Most, who have looked for them, have found an aphid or two. Treatable populations however, are an exception. Many fields still have few aphids.

Several folks have reported aphids at low populations. Delon Clarkson and Frenchie Bellicot were seeing winged aphids in WC Minnesota but at low levels. “Deep throat”, an informant on the eastern front, commented on seeing only three plants with aphids when scouting an 80 acre soybean field. I am assuming that he looked at more than three plants.

The second part of the soybean aphid economic threshold is: *most of the plants (80% or more) have aphids.*
Many of you have observed groups of plants with very high aphid populations or “hotspots”. These hotspots often are on field borders. I would not base an insecticide treatment decision on populations in field borders or an isolated hot spot or two. Treatments to field borders can lead to heavily infested borders within a few weeks.

An increasing aphid population is the third part of the soybean aphid economic threshold. Pay close attention to the aphids in fields or areas with high populations before you make a spray decision.

The top photo shows a soybean leaf from a plant heavily infested with soybean aphid. The lower photo is a close-up of the same leaf. The cast skins, nymphs with wing pads and winged adult aphids are signs of an upcoming change. Look for an orange color to the head and thorax, squared front to the thorax and wing pads of nymphs. Most, if not all, of this aphid colony will leave the plant.

Aphid populations can double in 2-3 days but increases are typically slower. Remember, yield loss starts well after a field averages 250 aphids/ plant. Depending on weather forecast and sprayer scheduling, you might want to give the field a day or two to see what happens with these colonies that are going winged. Seeing diseased aphids may be another reason to wait a day or two.

Small early planted fields near buckthorn are still most likely to have aphids. Fields under moisture stress may see declining aphid populations. Aphid population collapse and emigration of winged aphids (alates) is increasingly common. Aphid populations are declining in mid - R4 (full pod) stage soybeans at the SWROC. Over the next week or so, I suspect that hotspots and more heavily infested fields will increasingly produce more migratory alates.

As usual, the winged aphids are going to help decide late–season 2013 aphid populations in Minnesota. We may start to see more widespread threshold populations in ten days or so, probably after August 11. The large number of later planted soybean could make late August aphid scouting more exciting than typical.

**Soybean aphid insecticide notes:**
Always read and follow the insecticide label.

Use the proper nozzles, pressure and water volume to provide canopy penetration and coverage.

Regardless of product, insecticide residual is short on soybeans that are still rapidly adding terminal vegetative growth (before R4).

High temperatures can reduce the residual and effectiveness of insecticides.

Switch insecticide class if you need to re-treat a field.

Watch for spider mite development if dry conditions persist.
Some of the insects in SWROC soybeans the past week.

Currently, Convergent lady beetles (left) are most abundant now. Polished lady beetles(right) are also numerous. Both are effective native predators.

Near aphid colonies, the large, introduced Multicolored Asian lady beetles (left) and the tiny native Parenthesis lady beetles (right) are starting to show up in small numbers.

A multicolored Asian lady beetle larva foraging on soybeans (left). The black square on the back is fairly distinctive for the species. A convergent lady beetle pupa (right) contains a developing adult. This is a freshly formed pupa. Most lady beetle pupae will have more black markings. A close look at a pupa will reveal legs, antennae, segments and other features of the adult.
The small, metallic flies are predators. They are long-legged flies (Diptera: Dolichopodidae). There are several species in Minnesota. Lacewing eggs are placed on slender stalks (right). This may help minimize cannibalism by the predatory nymphs.

A young hover fly (Diptera: Syrphidae) larvae is shown feeding on a hapless soybean aphid (left). A more mature specimen is shown on the (right).

There are several species of fly larvae predatory on soybean aphids out there now. I showed a picture of aphid midge larvae in a previous issue. Another species is shown on the left.
The small blue butterflies hanging around soybean aphid colonies are eastern tailed blues. The male upper right has brighter blue upper wing surfaces than the female (above right). The larvae feed on various legumes and their blooms. They will not hurt soybean yields. The larvae are often tended by ants like many aphids (myrmecophily). They trade honeydew for protection.

Flea beetles and their distinctive feeding damage are common. They are not typically yield limiting in Minnesota. Combine flea beetle feeding with other leaf feeding damage and use the generic defoliation threshold.

A red-legged grasshopper nymph (left). This is one of the smallest sized crop pest grasshopper species. The white band extending into the cheek is a diagnostic character for this species. Grasshopper damaged soybean leaflets on the right.
There are still a few green cloverworms out there. This solitary, young green cloverworm was observed on a soybean leaf unaware that its kin had been causing concern for some South Central Minnesota agriculturists.

Green cloverworms have two anal prolegs and three sets of abdominal prolegs. Soybean, cabbage, forage and several other loopers have only two sets of abdominal prolegs. Most butterfly and moth larvae have four sets of abdominal prolegs. The reduction in prolegs is what gives loopers their looping gait.

I appreciate the updates from the countryside!

Happy trails,

Bruce Potter

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